

# Week 2

## Lesson 3 sheet 1

Year 5

### 12 What changes can sieves and filter papers reverse?

- Sieves can separate mixtures of solids with different sized particles.
- Filter papers can separate solid particles from water.

If you mingle two or more solids together you make a mixture. Sometimes you can see the different solids because they are different sizes or colours. Adding a solid to a liquid also makes a mixture. Sometimes the solid doesn't dissolve and it is easy to see. Often you can **reverse the change** by using sieves or filter papers. Magnets can help separate out magnetic materials like iron filings and steel paper clips.

#### How do you sieve a mixture of more than one solid?

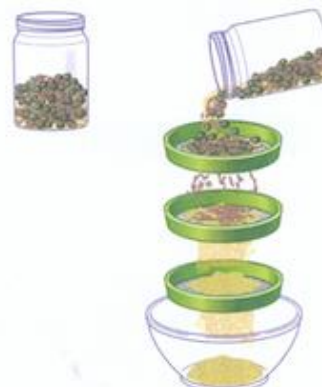
Leopard class discussed how to separate a mixture of sand, rice and dried peas.

'The mixture has different sized particles. The peas are much larger than the other two. Rice grains are bigger than sand.'

'Let's use the sieve with the big holes first and then the other one.'

'Look what happens! The big peas cannot get through the sieve with the big holes but rice and sand can.'

The sieve with the smaller holes lets the sand through to the bowl but traps the rice. The mixture has separated!



#### How can you clean up dirty water?

Leopard class then discussed how to separate a mixture of sand and water.

'The smallest sieve we have still lets both the sand and water go through. We need an even finer sieve.'

'Filter paper is like a fine sieve. It looks solid, but when you look at it with a microscope you can see it isn't.'

##### Mixture

A substance that contains two or more materials that can be separated.

##### Filter paper

A special piece of paper with fine holes used for separating a liquid from a solid.

## Sheet 2

12 What changes can sieves and filter papers reverse?



### On track

1 This container has sand and stones mixed up with water.

- (a) What would happen if you passed the mixture through a sieve with large holes?
- (b) Describe what you might do then to make sure you had separated all three materials.



### Aiming higher

2 Mr Hills gave his class a mixture of iron filings, sand, gravel and paper clips. He asked them to devise a way of separating them from each other.

- (a) Describe how they might separate the mixture.
- (b) What equipment would they use?
- (c) In what order would they do their separation?



3 Explain how you would separate a mixture of rice, pasta, salt and water.



### How well am I doing?

#### On track

I can explain how a sieve separates some mixtures of solids.

#### Aiming higher

I can explain when a filter paper or magnet might be used to separate a mixture.

# Lesson 4

## Sheet 1

Year 5

### 13 How well does sugar dissolve?

- Fair tests help you investigate dissolving.
- Sometime errors can creep in but you can spot these.

Mr Hills has told his class that sugar dissolves in water. Their job is to find out how the temperature of the water affects the time it takes for the sugar to dissolve. They had to plan, carry out and make sense of their investigation. Harry predicted, 'The sugar will dissolve more quickly when the water is hotter.'

#### How did Leopard class plan their test?

To make their test fair they used 20g of sugar and 200cm<sup>3</sup> of water in every test.

They used hot water from the kettle and added cold water to it until the temperature was 30°C, then added the sugar and stirred it gently.

They timed how long it took the sugar to dissolve. They made sure the water stayed at 30°C using a nightlight. They did this three times.

Another group did exactly the same but the temperature of the water was 40°C.

Two other groups used water at 50°C and 60°C. The class shared all their results.

#### Were there any errors in their results?

Different groups did the test. The more readings they took, the more reliable the results, because any errors could be spotted. These are their results.

Temperature of water (°C)	Time (minutes)		
	Test 1	Test 2	Test 3
30	11	9	11
40	8	8	10
50	11	9	7
60	6	7	6

If you look at their first test, you can see the time at 50°C looks odd. It is higher than the one at 40°C. This does not seem to fit the pattern. There may be more than one!

#### Anomalous (odd) result

A result that does not seem to fit a pattern.

#### Error

A mistake.

# Sheet 2



## On track

1 Mr Hills quizzed his class about how they planned and did their investigation.

(a) Which of these following pieces of apparatus did they use?

scales	beaker	filter	stirring rod	spoon	magnet
measuring cylinder	test tube	switch	sieve	kettle	thermometer

(b) Name the **one** factor they changed as they carried out their investigation.

(c) Name the factors they kept the same to make their investigation fair.

(d) Someone said that doing the test three times made it fair. Is this true?

(e) Mr Hills spotted Harry and Sara measuring the temperature of the water in different ways.

Which one is doing it correctly? Explain your answer.



## Aiming higher

2 Mr Hills asked them some questions about their results. Can you answer them?

(a) Which results in the table are 'odd'? Explain why they might have occurred.

(b) Do the three tests show a pattern? If so, explain what it is.

(c) Does the evidence in the table support Harry's prediction? Explain your answer.

(d) Some children gave the following reasons to explain why their test was fair.

Which do you think is the best explanation and why?

- We all had a turn at stirring the solution.
- We did a fair test because we kept everything the same.
- We did each temperature three times and found the average.
- Some water stayed in the measuring cylinder.



## How well am I doing?

### On track

I can plan a fair test.

### Aiming higher

I can spot errors in a results table and explain why they might occur.